Claims

1. A submersible gas compressor comprising:

a ceramic high pressure piston in contact with a ceramic sleeve;

a drive piston mounted to said ceramic high pressure piston such that movement of said drive piston simultaneously moves said ceramic high pressure piston; and

a crank in mechanical connection with said drive piston.

2. The compressor of claim 1 further comprising a thermal immersion tank comprising a liquid heat transfer fluid.

3. The compressor of claim 1 further comprising a compliant coupling between said ceramic high pressure piston and said drive piston.

4. The compressor of claim 1 wherein said crank has a double hung shaft operating independent of cantilever motion.

5. The compressor of claim 1 wherein said ceramic high pressure piston contacts said ceramic sleeve independent of a lubricating liquid.

6. The compressor of claim 1 wherein the reciprocating movement of said drive piston cycles between 600 and 800 cycles per minute.

7. The compressor of claim 2 wherein the liquid heat transfer fluid is an aqueous solution.

8. A gas delivery system comprising:

a first stage compressor pressurizing an inlet gas to between 90 and 500 psig;

a first absorption bed comprising a molecular sieve material in fluid communication with said first stage compressor, said absorbent bed enriching an exiting gas stream in at least one inlet gas component;

a second stage compressor immersed in a liquid heat transfer fluid, compressing the exiting gas stream to a pressurized gas stream having a pressure of between about 5000 and 10,000 psig;

a cascade system for storing the pressurized gas stream at a pressure between about 3500 and 5000 psig;

a control system in operational control of at least one of said first stage compressor, said absorbent bed, said second stage compressor and said cascade system; and

an outlet for delivering said pressurized gas stream.

9. The gas delivery system of claim 8 wherein said molecular sieve is type 5A and said at least one inlet gas component is oxygen.

10. The gas delivery system of claim 8 further comprising a blending valve interspersed between said absorbent bed and said second stage compressor for delivering in combination the exiting gas stream and the inlet gas.

11. The gas delivery system of claim 8 further comprising at least one monitoring device selected from the group consisting of: pressure gage, oxygen concentration gage, and thermocouple, coupled to said cascade system and providing data to said control system.

12. The gas delivery system of claim 8 further comprising a blending valve in fluid communication with said outlet and the inlet gas for delivering in combination pressurized gas stream and outlet gas.

13. The gas delivery system of claim 8 further comprising a second absorption bed.

14. The gas delivery system of claim 13 wherein the first absorption bed is connected in series with the second adsorption bed.

15. The gas delivery system of claim 13 wherein the first absorption bed is connected in parallel with the second adsorption bed.